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a vertical section of the unruptured sporangium they may be seen in position, imbedded in the mass of spores. The colored scales upon the surface of the sporangium vary considerably in size in different specimens.

CALICIOPSIS, *Gen. nov.*

Receptacle oblong-urceolate or subcylindrical, at first closed, then open and pulverulent at the apex, stipitate.

A small *Calicium*-like fungus, which does not well agree with the characters of any genus known to me, has fallen into my hands, and the present genus has been founded upon it. It partakes to some extent of the characters of some of the small substipitate species of *Cenangium*, but its more slender habit, long stem and urceolate or subcylindrical receptacle, which soon becomes pulverulent above, separate it from that genus. These same characters and its less tough or corneous substance forbid its reference to the genus *Tympanis.*

CALICIOPSIS PINEA.—Scattered or caespitose, about one line high, glabrous, shining, black; stem slender, straight or curved, slightly thickened at the base, often growing from a cluster of black sphaeriform perithecia which contain spermatoid bodies; receptacle narrowly urceolate, sometimes a little curved or inclined to one side, slightly exceeding the stem in diameter, soon brownish-pulverulent at the apex; asci oval or subelliptical, long-pedicellate, eight-spored; spores crowded, simple, elliptical, colored, .0002–.00025 of an inch long.

Bark of living pine-trees. Vermont, C. G. Pringle.

The pecular form of the receptacle is suggestive of the dry capsules of some mosses, particularly of some species of *Hypnum.* The sphaeriform bodies and their spermatoid contents are probably only another condition of this fungus. The young stems are at first pointed, but as they increase in length they become more obtuse and finally the apex develops into the receptacle. Although the plant resembles some species of *Calicium* it is wholly destitute of any thalline crust and gonidial cells, and must be deemed a fungus. The genus should be placed among the Patellariei near *Cenangium.*

EXPLANATION OF PLATE XXIV.—Fig. 1, a piece of decaying wood bearing six plants of *Physarella mirabilis*, one of them with the sporangium ruptured.—Fig. 2, two plants magnified.—Fig. 3, vertical section of the sporangium of a magnified plant showing the spine-like cross-bars imbedded in the mass of spores.—Fig. 4, a magnified plant with the sporangium ruptured and the spores dispersed. —Fig. 5, filaments from the capillitium with one of the knot-like thickenings x400. —Fig. 6, a spine-like cross-bar containing lime-granules x400.—Fig. 7, four spores x400.—Fig. 8, a piece of pine-bark bearing several plants of *Caliciopsis pinea.*—Fig. 9, a tuft of four plants magnified, two of them mature and two immature; also sphaeriform bodies at the base.—Fig. 10, two asci containing spores x400. —Fig. 11, six spores x400.—Fig. 12, six spermatoid bodies x400.

New Western Plants.

By EDWARD LEE GREENE.

BIGELOVIA (APLODISCUS) PARISHII.—Arborescent, 6–12 feet high; leaves lanceolate, 2 inches long, 3–5 lines wide, entire, with acute tips, sub-coriaceous, strongly punctate, glutinous; heads numerous, in crowded corymbs terminating the erect branches, small, 10–12-flowered; involucre turbinate, the scales few, irregularly imbricated, lanceolate, acute, with a green midrib, but no green tips; style-appendages filiform-subulate, a little longer than the stigmatic portion; akenes turbinate, minutely silky.

San Bernardino Mountains, California, S. B. and W. F. Parish, No. 571, collected in September and October, 1881.

A well-marked species, the largest of its genus, and most related to *B. arborescens*, Gray.

MADIA (MADARIA) CITRIODORA.—A villous-hirsute, lemon-scented annual a foot high; stem simple, leafy up to the corymbose summit; leaves all alternate, entire, 2 inches long; heads small, in a rather close, corymbose panicle; scales of the involucre with short tips; rays short and inconspicuous, greenish-yellow; akenes short and thick, for the genus, and rounded on the back, like those of *Hemizonia*, not wholly enclosed by the involucral scales; chaff of the receptacle free.

Hills about Yreka, California, collected by the writer in June, 1876.

The species is rather anomalous by its akenes, which are as near those of a *Hemizonia* as of a *Madia*; but it has strictly the habit of the latter genus, and its aspect is that of the smaller forms of *M. elegans*, Don.

HEMIZONIA (CALYCADENIA) HISPIDA.—Stem virgate, stout and rigid, 1½–3 feet high, scabrous, and somewhat hispid; leaves narrowly linear, 1–3 inches long, clothed toward the base with long setose-hispid hairs, and bearing a tack-shaped gland at summit; heads large, paniculate, or in short-peduncled, axillary clusters; rays 3–5, sulphur-yellow, deeply 3-cleft; akenes of the ray commonly smooth except on the angles and at the summit; those of the disk usually clothed throughout with a short, appressed, silky pubescence, and bearing a pappus of about 10 nearly equal subulate, barbellate-scabrous, chaffy scales.

Collected by the writer on a sandy plain in Merced County, near Atwater Station, California, in September, 1881.

In technical character the species is near *H. Douglasii*, Gray; but it is sufficiently distinguished by its stout, coarse habit, and the much larger size of all the parts of both its flowers and fruit. Dr. Gray considered it too near *H. spicata*, Greene, which was published in the BULLETIN for February, but that has, together with its white, or rose-tinted rays, very differently shaped, and almost white-villous ray-akenes.

HYMENOPAPPUS ROBUSTUS.—Floccose-tomentose; stem about 2 feet high from a biennial root, stout and rigid, simple up to the corymbose summit, leafy throughout; none of the leaves entire, all but the upper cauline 2–3-pinnately parted, the lobes linear, entire; heads large, in a loose, or, more commonly, rather compact corymb; scales of the involucre 10–12, obovate, with petaloid margins; akenes very villous; pappus half as long as the corolla-tube, its spatulate scales coarsely lacerate-toothed.

Common on the sandy plains of New Mexico; obtained by almost all collectors in the region, and heretofore referred to *H. flavescens*, Gray; but that is a perennial, inhabiting higher altitudes, is always less robust, has its lowest radical leaves perfectly entire, and all the others less finely divided than in this very distinct species.

HIERACIUM RUSBYI.—Stem about 2 feet high, leafy to the top, paniculate, bearing numerous, small, 15–20-flowered heads; leaves oblong-lanceolate, 3 inches long, entire or sparingly denticulate, those of the stem sessile and clasping, all clothed on both surfaces, but especially along the veins beneath, with long pilose hairs; peduncles glabrous, involucres nearly so; flowers yellow; the ribbed akenes short, columnar, truncate at the apex; pappus brownish.

Mogollon Mountains, New Mexico, Aug., 1881. H. H. Rusby.

Dr. Gray writes that the species exists in the first New Mexican collection of Mr. Charles Wright. It is, therefore, without doubt, the plant referred to *Crepis ambigua*, Gray, in Pl. Wright. i, 129, and mentioned again in Pl. Wright. ii, 106, as "a true *Hieracium*."

HIERACIUM BREVIPILUM.—Stem a foot or two high, leafy only toward the base; lower leaves oblong the upper linear-lanceolate, remotely denticulate or entire, 3–5 inches long, pubescent with short, pilose hairs; heads few, rather large, in an open panicle, on long peduncles which, together with the involucre, are bristly hairy and glandular; ligules apparently greenish-yellow; pappus white or fuscous, barely equalling the fusiform, ribbed and beaked akenes.

Mogollon Mountains, New Mexico, Aug. 1881. H. H. Rusby. Also reported by Dr. Gray as occurring in Mr. Pringle's recent Arizona collection.

In Mr. Rusby's specimens the pappus is uniformly bright white, and the plant would thus seem to belong to *Crepis* rather than to *Hieracium*. But Dr. Gray informs me that *H. Fendleri*, Gray, sometimes has its pappus white; and the same is true of *H. Scouleri*, Hook. The species here described much resembles *H. carneum*, Greene, which is now more anomalous in the genus by its rose-purple flowers than by the uniform whiteness of its pappus.

SENECIO RUSBYI.—Stems 2–4 feet high, with more or less of a short, white pubescence, leafy to the top; leaves nearly glabrous, ovate-lanceolate, 3–6 inches long, the lower tapering to a strongly winged petiole, the upper merely contracted above the auriculate-clasping base, acute at apex, the margins strongly dentate with sharp, salient teeth; heads large, nodding, in a rather loose racemose panicle; involucre with a few setaceous bracts at base; scales broad, with a thin, yellowish, membranous margin, and a tuft of short, white hairs at the acute tip; akenes of a light chestnut color; smooth, and strongly striate; pappus barbellate-scabrous.

Mogollon Mountains, New Mexico, collected by Mr. Rusby in August, 1881.

Allied to *S. Bigelovii*, but with smaller and more numerous heads, and a very different involucre. Dr. Gray reports it from the Santa Catalina Mountains of Arizona, collected by Mr. Lemmon.

CUPRESSUS ARIZONICA.—A tall, conical tree 40–70 feet high, with horizontal branches; trunk 2–4 feet in diameter, covered with a dark red fibrous bark; bark of the branches flaking off in thin plates and leaving a smooth surface; branchlets stout and rather rigid, sharply quadrangular; leaves closely imbricated, very glaucous, neither pitted nor glandular; their margins entire, or, in the very oldest, denticulate; cones crowded on short, stout peduncles, globose, about an inch in diameter, of 6–8 very thick, and strongly bossed scales; seeds numerous, 2 lines or more wide.

This fine cypress was discovered by the writer on the mountains back of Clifton, in the extreme eastern part of Arizona, on the first day of September, 1880.

Abundant specimens of wood, and fruiting branches were secured, and soon distributed, under the above name, to the principal herbaria of this country, and several in Europe, including that of the Royal Gardens at Kew.

In the course of the year and a half that has since intervened, the species has been collected at different points in the southern and eastern portions of the same Territory, by Messrs. Rusby, Pringle and Lemmon. The tree is peculiar in that, while the bark of its trunk is as shreddy as that of any cedar, that of the branches, even the larger ones, is scaly, falling off in thin plates. The wood is light and straight grained, splitting with the utmost readiness; that of the heart being dark red, resembling that of red cedar. The branchlets bear so strong a likeness to those of *Juniperus pachyphloea*, Torr., that without fruit they are hardly distinguishable. It is the principal tree of the mountains which lie to the north of Mt. Graham, and forms dense forests, particularly on the northward slopes.

Notes on New England Algae.

By W. G. Farlow.

Since the appearance of my paper on New England Algae, I have received a number of interesting species, new to our coast, from Mr. F. S. Collins of Malden, Mass., and Rev. J. D. King, of Edgartown, Martha's Vineyard. In 1881 Mr. Collins sent a specimen, collected near Little Nahant, which resembled a small *Asperococcus*, and which could not at the time be determined. In March of this year he succeeded in finding a considerable number of specimens of the same species in excellent condition, and, through his kindness, I have been enabled to examine both living and dried specimens. The alga in question is of a decided olive-brown color when fresh, and becomes somewhat greenish in pressing, in this respect resembling some of the *Asperococci* and *Punctariae.* The frond is tubular, and resembles strongly the species of *Asperococcus* in habit, but even in its adult condition it is composed of a single layer of cells, which are generally associated in fours and are of a gelatinous texture. Were it not for the distinctly brown color, one would be inclined to consider the plant as a species of *Prasiola*, especially if examined after having been dried. There can be no doubt, however, that it belongs to the *Phaeosporeae*, and it appears to me to constitute a new genus (*Phaeosaccion*) of that suborder, differing from other genera in having its tubular frond composed of a single layer of rather